

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

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| To: PETER ROGALSKYJ ROGALSKYJ & WEYAND, LLP P.O. BOX 44 LIVONIA, NY 14487-0044 |
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| Date of mailing (day/month/year) 12 MAY 2005 |
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| Applicant's or agent's file reference 047.00062 (RFT-118) | | FOR FURTHER ACTION See paragraph 2 below |
| International application No. PCT/US04/33089 | International filing date (day/month/year) 07 October 2004 (07.10.2004) | Priority date (day/month/year) 13 November 2003 (13.11.2003) |
| International Patent Classification (IPC) or both national classification and IPC IPC(7): B05D 1/36; C08F 283/00 and US Cl.: 427/202; 525/528 | | |
| Applicant NDSU RESEARCH FOUNDATION | | |

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application


2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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| Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230 | Authorized officer  William B. Fletcher III Telephone No. (571) 272-1700 |
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US04/33089

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|----------------------------------|-----|
| Novelty (N) | Claims <u>4-16, 18-29, 32-49</u> | YES |
| | Claims <u>1-3, 17, 30, 31</u> | NO |
| Inventive step (IS) | Claims <u>18-29, 34-49</u> | YES |
| | Claims <u>1-17, 30-34</u> | NO |
| Industrial applicability (IA) | Claims <u>1-49</u> | YES |
| | Claims <u>NONE</u> | NO |

2. Citations and explanations:

Please See Continuation Sheet

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

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V. 2. Citations and Explanations:

The objective of the international preliminary examination is to formulate a preliminary and non-binding opinion on the questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), and to be industrially applicable. PCT Article 33(1).

Claims 1-3 and 17 lack novelty under PCT Article 33(2) as being anticipated by Wurbs et al. (US 2,933,400 A).

This reference teaches a process for providing a metal substrate with a rust-prevention coating comprising magnesium powder in a binder (1:15-18 and 1:60-2:68). On the subject of chromium, the reference is silent; which the examiner interprets as a fair teaching that the rust-prevention coating of this reference contains no chromium at all. With respect to claim 17, it is the examiner's position that the disclosure of a varnish binder anticipates the claimed polymeric binder.

Claims 1-3 and 17 lack novelty under PCT Article 33(2) as being anticipated by Parson et al. (US 4,083,726 A).

This reference teaches a process for providing a metal substrate with corrosion-protection coating (abstract and 1:11-16). The coating comprises a polymeric organic binder (2:30-46) and powdered magnesium (3:43-46). Inclusion of chromates is optional, with several non-chromium alternatives clearly taught (3:13-3:42).

Claims 1-3 and 17 lack novelty under PCT Article 33(2) as being anticipated by the English-language abstract of JP 56-102584 A.

This reference teaches a process for providing a metal substrate with a corrosion-inhibiting coating. The coating comprises powdered magnesium in a polymeric (polysaccharide) binder. On the subject of chromium, the reference is silent; which the examiner interprets as a fair teaching that the rust-prevention coating of this reference contains no chromium at all.

Claims 1-3, 17, 30, and 31 lack novelty under PCT Article 33(2) as being anticipated by McKaveney et al. (US 4,360,384 A).

This reference teaches a process for providing a metal substrate with a corrosion-protection coating (abstract). The coating comprises powdered magnesium in a cross-linked polymeric binder that may include silicates (3:5-6:60). With respect to claims 30 and 31, this reference discloses various magnesium alloys, including those comprising magnesium and manganese (Table I).

Claims 4-8 lack an inventive step under PCT Article 33(3) as being obvious over Wurbs et al. (US 2,933,400 A) or Parson et al. (US 4,083,726 A) or McKaveney et al. (US 4,360,384 A) or JP 56-102584 A.

The teachings of these references are detailed above. None of these references explicitly teaches that the metal substrates are the claimed aluminum alloys. It is the examiner's position that it would have been obvious to apply the coatings disclosed in these references to any suitable metal substrate, including the recited aluminum alloys, so as to impart corrosion protection thereto.

Claims 9-16 lack an inventive step under PCT Article 33(3) as being obvious over Parson et al. (US 4,083,726 A) alone or Wurbs et al. (US 2,933,400 A) or McKaveney et al. (US 4,360,384 A) or JP 56-102584 A, each in view of Parson et al.

The teachings of the Parson, Wurbs, McKaveney, and JP references are detailed above. None of these references explicitly teaches the claimed size and amount of powdered magnesium. Parson teaches that these are result-effective variables effecting not

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Supplemental Box

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only the corrosion-resistance of the coating but the overall cost of the coating process (3:44-47 and 4:6-20). Additionally, it is the examiner's position that these are result-effective variables because they effect the coating characteristics of the composition as well (viscosity for example). Consequently, it is the examiner's position that it would have been obvious to one of ordinary skill in the art to modify the processes of any one of the Parson, Wurbs, McKaveney, or JP references in order to optimize such result-effective variables by routine experimentation.

Claim 32 lacks an inventive step under PCT Article 33(3) as being obvious over Parson et al. (US 4,083,726 A) or Wurbs et al. (US 2,933,400 A) or McKaveney et al. (US 4,360,384 A) or JP 56-102584 A, each in view of Mansfield et al. (US 6,632,294 B2).

The teaching of the Parson, Wurbs, McKaveney, and JP references are detailed above. None of these references explicitly teaches that the claimed cerium pretreatment. Mansfield teaches that metal substrates may be coated with cerium so as to impart a protective, impermeable coating thereto (3:45-4:20). It would have been obvious to one of ordinary skill in the art to modify the processes of any one of the Parson, Wurbs, McKaveney, or JP references so as to pre-treat with cerium. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of imparting further protection to the metal surface.

Claims 33 and 34 lack an inventive step under PCT Article 33(3) as being obvious over Wurbs et al. (US 2,933,400 A) or Parson et al. (US 4,083,726 A) or McKaveney et al. (US 4,360,384 A) or JP 56-102584 A.

The teaching of these references are detailed above. None of these references teach the particular substrate or magnesium flake recited in these claims. It is the examiner's position that, because none of the cited references are explicitly limited to one particular substrate type or configuration, it would have been obvious to one of ordinary skill in the art to modify the process of any one of these references to coat the claimed surface with the expectation of similar results: imparting corrosion protection thereto. Additionally, it is the examiner's position that it would have been obvious to modify the processes of any one of the claimed references so as to utilize any suitable form of the magnesium powder, including magnesium flake, with the expectation of similar results: imparting corrosion protection to the substrate.

Claims 18-24, 25-29, and 35-49 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest any of the compositional limitations recited in these claims.

Claims 1-49 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

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